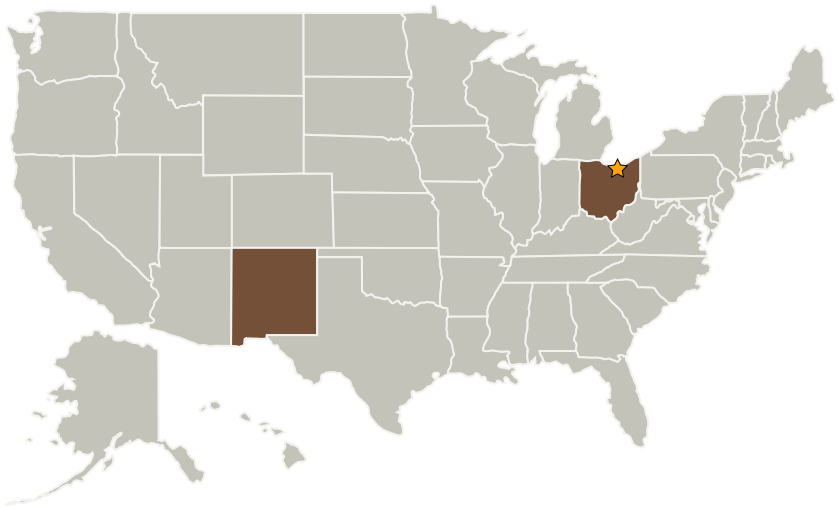
Moisture Resistant Primer for Composite Bonded Repairs, Phase I

Completed Technology Project (2008 - 2008)

Project Introduction

Aging and durability of aircraft in both the military and civilian sectors are becoming major issues as the existing fleet continues to age. Additionally, the increased use of composite structures in the civilian fleet, such as in the Boeing 787 Dreamliner and the Airbus A380, make the understanding and/or improvement of composite durability, particularly durability of repairs, even more critical. Several areas have been identified as targets for improvement in composite aircraft repair. These include the development of rapid, low temperature repair methods and associated materials as well as development of the quality of repairs when they are made. Adhesion of bonded repairs is one area that needs to be addressed. Adherent Technologies, Inc. is proposing a novel moisture-resistant primer system for use in repairs of standard carbon/epoxy composites used in many subsonic aircraft. Our proprietary chemistry comprised of a reactive coupling agent and a carrier resin compatible with standard aerospace epoxy resins bonds directly to the prepared aircraft composite surface while retaining residual functionality that can be cured directly into the matrix of the repair leading to a covalently bound repair, thereby strengthening the repair interface. Proper selection of the coupling agent structure and carrier resin can serve to further enhance the moisture resistance and thereby durability of the composite repair.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Adherent Technologies, Inc.	Supporting Organization	Industry	Albuquerque, New Mexico

Primary U.S. Work Locations	
New Mexico	Ohio

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Andrea Hoyt Haight

Technology Areas

Primary:

- TX15 Flight Vehicle Systems
  - TX15.1 Aerosciences
    - TX15.1.6 Advanced Atmospheric Flight Vehicles